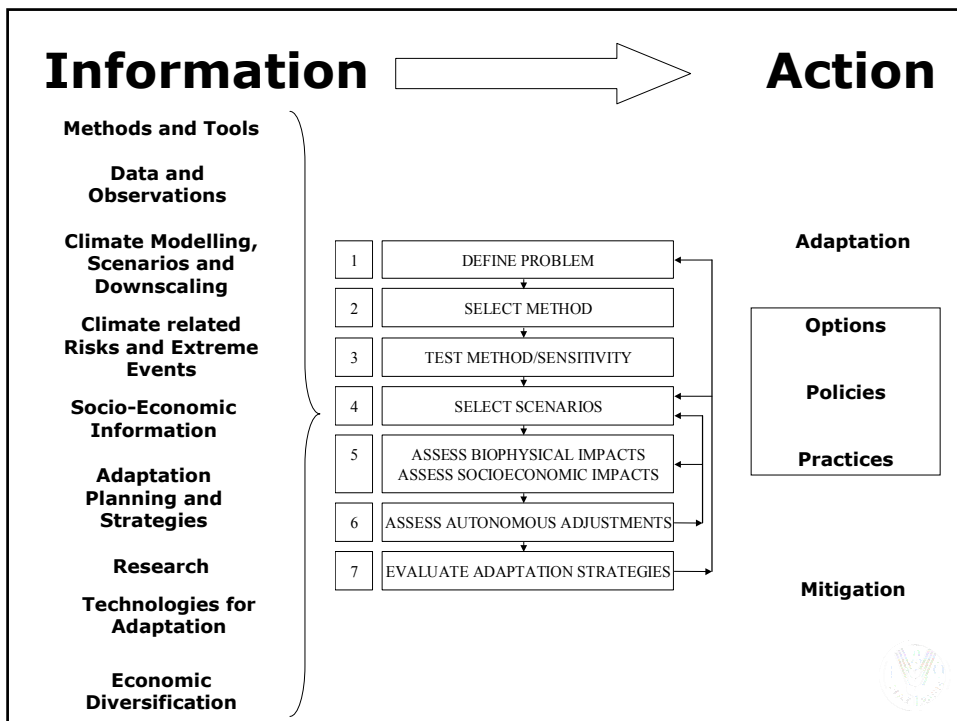


CLIMATE CHANGE	FAO WORK AREAS	BIO-ENERGY
<ul style="list-style-type: none"> <li>- Change in cropping systems and agroecosystem's productivity</li> <li>- Change in fishery stocks and distribution patterns</li> <li>- Different food supply scenarios</li> </ul>	<b>1. Food security (for a growing population)</b>	<ul style="list-style-type: none"> <li>- Competition between food security and energy security</li> </ul>
<ul style="list-style-type: none"> <li>- Increased vulnerability (especially of the poor)</li> <li>- Socio-economic instability</li> <li>- Availability of proper knowledge</li> <li>- Adaptation requirements</li> <li>- Institutional gaps</li> </ul>	<b>2. Rural development (and poverty alleviation)</b>	<ul style="list-style-type: none"> <li>- Renewal rural energy opportunities</li> <li>- More income and jobs</li> <li>- Higher food prices (positive and negative impacts)</li> <li>- Control over and access to energy</li> </ul>
<ul style="list-style-type: none"> <li>- Increased variability</li> <li>- Unreliable precipitation</li> <li>- Droughts, floods</li> <li>- Sea level rise</li> </ul>	<b>3. Water resources and water management</b>	<ul style="list-style-type: none"> <li>- Competitive water use</li> <li>- Water pollution with inputs</li> </ul>
<ul style="list-style-type: none"> <li>- Tenure security</li> <li>- Land loss and fertility changes</li> <li>- Storms, fires and impact on forests</li> <li>- Changes in land carbon sequestration</li> </ul>	<b>4. Land resources (incl. fragile ecosystems, agriculture and forestry)</b>	<ul style="list-style-type: none"> <li>- Land use changes</li> <li>- Land degradation</li> <li>- Tenure threats to the poor</li> <li>- Productive use of marginal lands</li> <li>- New investments in agricultural lands</li> </ul>
<ul style="list-style-type: none"> <li>- Shifting plant and animal population and extinction of some species</li> <li>- Migration of fish populations</li> <li>- Change in forest dynamics</li> <li>- Disrupted ecological balance for agrobiodiversity (e.g. soil microorganisms, pollinators, predators)</li> </ul>	<b>5. Biodiversity (for food and agriculture)</b>	<ul style="list-style-type: none"> <li>- Genetic homogeneity</li> <li>- Pressure on high biodiversity areas</li> <li>- Technological development</li> </ul>
<ul style="list-style-type: none"> <li>- New pests and diseases</li> <li>- Bio-security</li> <li>- Disasters due to climate extremes</li> </ul>	<b>6. Transboundary pests and diseases and other disasters</b>	
<ul style="list-style-type: none"> <li>- Uncompetitive conditions of tropical countries</li> <li>- Increased food import dependency</li> <li>- Trading of carbon rights</li> </ul>	<b>7. Marketing and trade</b>	<ul style="list-style-type: none"> <li>- Predatory bio-energy markets</li> <li>- Relation between fossil fuel and food prices</li> <li>- Urge for standards</li> </ul>



## The bottom line

- Climate change is already happening
- The poorest are hit first and hardest
- Adaptation is a development issue
- We need to launch adaptation processes with farmers NOW
- Working in a complex context with many uncertainties



## Lessons

- Climate adaptation requires a social learning process
- Mandated Institutions for adaptation & clearly determined responsibilities are key
- Adaptation techniques to climate change are very location specific



## Lessons

Re-vive research –development link

Monitoring ongoing adaptation practices, alert on risks of mal-adaptation, and establish links with policy making



## GAPS

Downscaling activities at local level (data, models and methods)

Standards to derive indicators

Climate variability and Disaster Risk management

Link to sustainable land and water management practices

Indigenous knowledge and 'no regret' options

Awareness raising and capacity building

Information dissemination and training

Linkages among NWP's elements



# GAPS

Financial assistance for development of adaptation technologies and technology transfer:

- Assess the adaptation technologies and formulate the inventory of adaptation technologies.
- Promote information sharing
- Promote the development of advanced adaptation technologies
- Promote adaptation technology transfer from developed countries to developing countries

Standard approaches to measure cost-effectiveness from adaptation responses



## **Adaptation & Mitigation have to go hand-in-hand**

Adaptation measures can:

- Reduce risk
- Strengthen resilience
- Ease transitions

but also:

- Reduce emissions
- Sequester carbon



## Top-down approach



## Bottom-up approach

